Overview

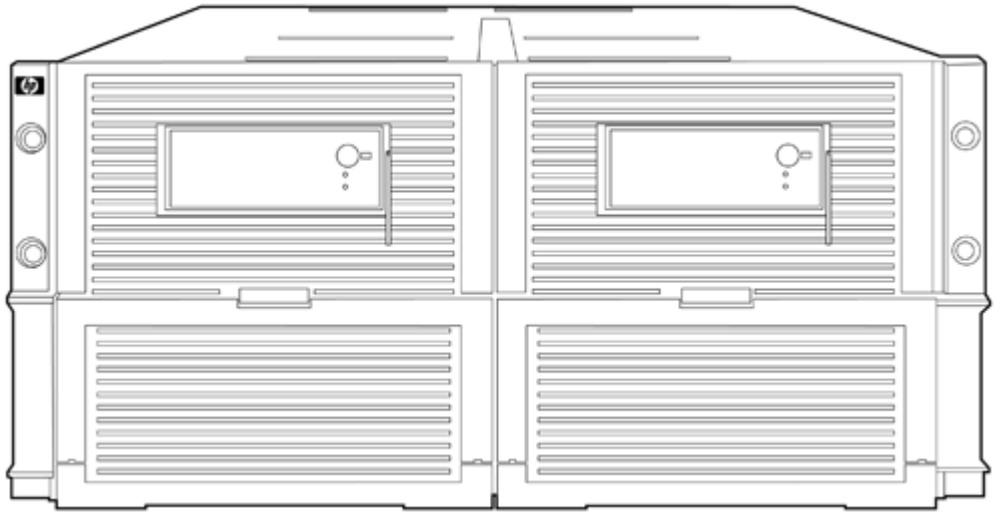
Finding it difficult to keep up with the growth in unstructured data? Looking for a cost-effective high capacity storage option?

With the HP 600 Modular Disk System, HP extends and redefines direct-attached storage for BladeSystem servers, combining the simplicity and cost effectiveness of direct-attached storage without sacrificing flexibility or performance.

Use the MDS600 as part of a straight-forward in-rack 3 Gb/s SAS implementation that delivers high-density, low-cost external zoned direct attach storage for HP BladeSystem servers. Easily configure storage on the fly with easy to use management software.

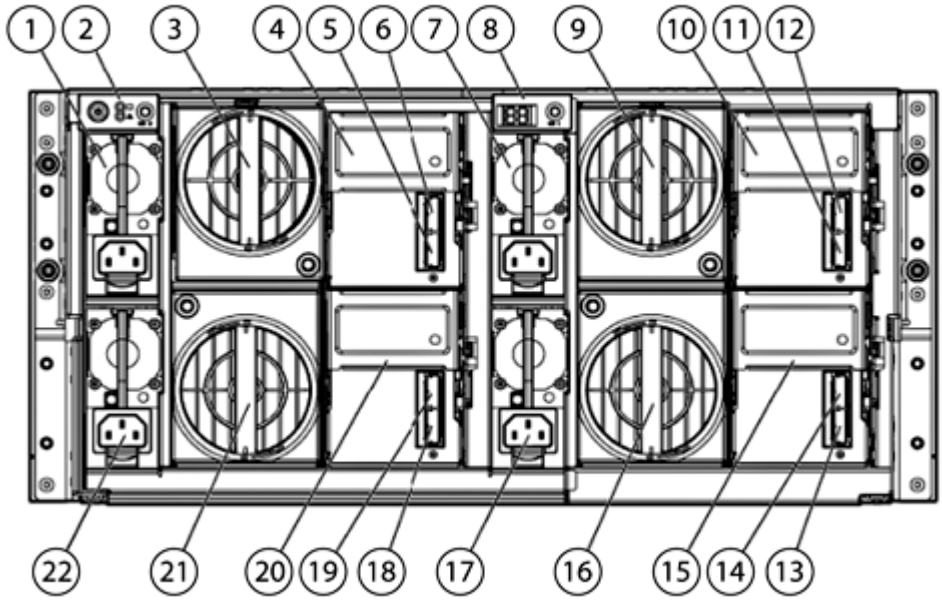
The MDS600 can also be directly connected to ProLiant DL and ML servers using the Smart Array P212, P411, and P812 Controller using a standard 2M SAS cable; Single Domain only. Up to six MDS600 storage devices can be supported off a single BladeSystem enclosure for up to 1260 TB of capacity. End-to-end 3 Gb/s SAS connectivity enables a high performance storage solution using an HP Smart Array P700m controller, 3Gb SAS BL switches, and the MDS600. 6 Gb/s host connectivity enables higher performance, eases configuration/deployment and broadens supported features of an MDS600 using HP Smart Array P711m controller and 6Gb SAS BL switches.

For more information on Blade external SAS storage solutions for HP BladeSystem, see: www.hp.com/go/directconnect



HP 600 Modular Disk System

Overview



1. Power supply 1
2. Power On/UID 2 status panel
3. Fan module 1 (Drawer 2)
4. Primary I/O module (Drawer 2)
5. SAS 1 connector
6. SAS 2 connector
7. Power supply 3
8. UID 1 status pane
9. Fan module 1 (Drawer 1)
10. Primary I/O module (Drawer 1)
11. SAS 1 connector
12. SAS 2 connector
13. SAS 1 connector
14. SAS 2 connector
15. Secondary I/O module (Drawer 1)
16. Fan module 2 (Drawer 1)
17. Power supply 4
18. SAS 1 connector
19. SAS 2 connector
20. Secondary I/O module (Drawer 2)
21. Fan module 2 (Drawer 2)
22. Power supply 2

What's New

- Support of 6Gb/s Blade SAS Switch
- Support of P711m Smart Array Controller
- 3 TB HDD support (requires P711m and 6Gb BL SAS switch for HP Bladesystems).
  NOTE: For MDS600 6Gb host connectivity, P711m firmware 5.32 or higher, 6Gb BL SAS switch firmware 2.0.1.0 or higher and MDS600 firmware 3.44 are required.

Overview

At A Glance

- 5U rackmount form factor
- Supports seventy (70) 3.5" LFF Universal hot pluggable SAS or SATA drives
- Two pull-out drive drawers support hot plug large form factor dual-ported SAS or SATA drives in just 5U of rack space (35 hot plug drives per drawer)
- 3 Gb/s SAS connectivity using HP Storage 3Gb SAS BL switches in the interconnect bays, and HP Smart Array P700m Controllers in each BladeSystem server
- 6 Gb/s front-end SAS connectivity using 6Gb SAS BL switches in the interconnect bays, and HP Smart Array P711m controllers in each BladeSystem server
- Using the Virtual SAS Manager (VSM) in the HP SAS BL switch, assign or 'zone' MDS600 drive bays directly to BladeSystem server bay
- Two dual-port I/O module system recommended for SATA customers in single domain environments
- Additional option kit with two dual port I/O modules is added for SAS drives, creating a dual domain environment. A single BladeSystem enclosure supports up to six MDS600's externally. 3-0-0 warranty

Deployment Guide

For detailed deployment information, see the HP direct connect external SAS storage for HP BladeSystem deployment guide. Select Manuals under Resources for HP 600 Modular Disk System:

HP BladeSystems external SAS storage deployment guide for 3Gb

HP BladeSystems external SAS storage deployment guide for 6Gb

Models

HP 600 Modular Disk System	HP MDS600 with two Dual Port I/O Module System NOTE: Base model for SAS and SATA drives. Add AP763A when using dual ported SAS drives to create a dual domain environment for BladeSystems only. NOTE: Includes redundant hot plug power supplies and redundant hot plug fans. NOTE: Includes two right angle and two left angle power cords.	AJ866A
	HP MDS600 Dual I/O Module Option Kit NOTE: Add AP763A option kit to AJ866A when using dual-ported SAS drives to create a dual domain environment for BladeSystems only. NOTE: Configuring the MDS600 with four I/O modules and dual port SAS hard drives creates a dual domain environment for data path redundancy. Configurations using single port SATA hard drives and only two dual port I/O modules will not have data path redundancy, and a warning message will occur stating that the storage shelf is not redundant. NOTE: This option kit is not needed when connecting directly to ProLiant DL, ML and SL servers as only single domain is supported.	AP763A
	HP MDS600 with (35) 2TB Midline SAS drives 70TB Bundle NOTE: Includes MDS600 with (35) 2TB LFF Midline SAS drives, (4) dual port I/O modules, redundant power supplies and redundant fans. NOTE: For HP c-Class Blade Systems only.	BK823A
	HP MDS600 with (70) 2TB Midline SAS drives 140TB Bundle NOTE: Includes MDS600 with (70) 2TB LFF Midline SAS drives, (4) dual port I/O modules, redundant power supplies and redundant fans. NOTE: For HP c-Class Blade Systems only.	BK824A
	HP MDS600 with (35) 1TB LFF SATA Hard Disk Drive Bundle NOTE: Includes thirty-five 1TB LFF SATA drives, two dual port I/O modules, redundant hot plug power supplies and redundant hot plug fans.	AP764A
	HP MDS600 with (35) 450GB LFF SAS Hard Disk Drive Bundle NOTE: Includes thirty-five 450GB LFF SAS drives, four dual port I/O modules, redundant hot plug power supplies and redundant hot plug fans. NOTE: For HP c-Class Blade System Only	AP765A
	HP MDS600 with (35) 300GB LFF SAS Hard Disk Drive Bundle NOTE: Includes thirty-five 300GB LFF SAS drives, four dual port I/O modules, redundant hot plug power supplies and redundant hot plug fans. NOTE: For HP c-Class Blade System Only	AX670A
	HP MDS 600 with (35) 2TB 3G SATA - 70TB Bundle- Americas NOTE: Includes 2 dual port IO Modules, 4 fans (n+2), 4 power supplies (n+2) and 35 2TB 3G SATA drives.	BK827A
	HP MDS600 w/35 1TB 6G SAS - 35TB Bundle- Americas NOTE: Includes 2 dual port IO Modules , 4 fans (n+2), 4 power supplies (n+2) and 35 drives.	BK821A
	HP MDS600 w/35 2TB 6G SAS - 70TB Bundle- Americas NOTE: Includes 2 dual port IO Modules , 4 fans (n+2), 4 power supplies (n+2) and 35 drives.	BK823A
	HP MDS600 w/35 600GB 6G SAS - 21TB Bundle- Americas NOTE: Includes 2 dual port IO Modules , 4 fans (n+2), 4 power supplies (n+2) and 35 drives.	BK819A

Models

HP MDS600 with (70) 1TB LFF SATA Hard Disk Drive Bundle NOTE: Includes seventy 1TB LFF SATA drives, two dual port I/O modules, redundant hot plug power supplies and redundant hot plug fans.	AX668A
HP MDS600 with (70) 450GB LFF SAS Hard Disk Drive Bundle NOTE: Includes seventy 450GB LFF SAS drives, four dual port I/O modules, redundant hot plug power supplies and redundant hot plug fans. NOTE: For HP c-Class Blade System Only	AX669A
HP MDS600 with (70) 300GB LFF SAS Hard Disk Drive Bundle NOTE: Includes seventy 300GB LFF SAS drives, four dual port I/O modules, redundant hot plug power supplies and redundant hot plug fans. NOTE: For HP c-Class Blade System Only	AX671A
HP MDS600 w/70 2TB 3G SATA - 140TB Bundle- Americas NOTE: Includes 2 dual port IO Modules, 4 fans (n+2), 4 power supplies (n+2) and 70 2TB 3G Sata drives.	BK828A
HP MDS600 w/70 1TB 6G SAS - 70TB Bundle- Americas NOTE: Includes 2 dual port IO Modules, 4 fans (n+2), 4 power supplies (n+2) and 70 drives.	BK822A
HP MDS600 w70 2TB 6G SAS - 140TB Bundle- Americas NOTE: Includes 2 dual port IO Modules, 4 fans (n+2), 4 power supplies (n+2) and 70 drives.	BK824A
HP MDS600 w/70 600GB 6G SAS - 42TB Bundle- Americas NOTE: Includes 2 dual port IO Modules, 4 fans (n+2), 4 power supplies (n+2) and 70 drives.	BK820A
HP 2 Stk 4X Fixed C-13 Offset Power Cord Option Kit NOTE: This power cord option kit connects four MDS600 power supplies to a single power plug, reducing the number of PDUs needed in a rack. Can be used in several configurations, including all four power supplies on a single MDS600 or with two power supplies on each of two adjacent MDS600. This power cord has a C-20 connector for the PDU attach and four C-13 connectors for attach to the MDS600 power supplies.	AF502B

Related Items

HP 3Gb SAS BL Switch	HP 3Gb SAS BL Switch - Single Pack	AJ864A
	HP 3Gb SAS BL Switch - Dual Pack	AJ865A
HP 6Gb SAS BL Switch	HP 6Gb/s SAS BL Switch - Single Pack	BK763A
	HP 6Gb/s SAS BL Switch - Dual Pack	BK764A
P700m Smart Array Controller	HP Smart Array P700m Controller/512 NOTE: P700m Smart Array Controller/512 recommended for optimum performance with the MDS600 in 3Gb solutions.	508226-B21
	Battery Kit for P700m Controller/512	452348-B21
	HP Smart Array P700m Controller/256 NOTE: Does not support RAID 5 or 6. Does not support battery-backup.	507925-B21

Models

P711m Smart Array Controller	HP Smart Array P711m/1G FBWC NOTE: Smart Array Advanced Pack (SAAP) license key included.	513778-B21
HP Smart Array P212 Controller	HP Smart Array P212/256MB Controller For more information on the P212, see: www.hp.com/products/smartarray	
HP Smart Array P411 Controller	HP Smart Array P411/256MB Controller HP Smart Array P411/512MB Battery Backed Write Cache For more information on the P411, see: www.hp.com/products/smartarray	
HP Smart Array P812 Controller	HP Smart Array P812/1G Flash Backed Cache Controller For more information on the P812, see: www.hp.com/products/smartarray	
SAS cable	mini-SAS 4x 2M Cable All	
HP ProLiant Servers	HP ProLiant BL280c G6 HP ProLiant BL460c G7 HP ProLiant BL465c G7 HP ProLiant BL490c G7 HP ProLiant BL620c G7 HP ProLiant BL680c G5 HP ProLiant BL680c G7 HP ProLiant BL685c G7 HP ProLiant DL785 G6 Server HP ProLiant DL585 G7 Server HP ProLiant DL580 G7 Server HP ProLiant DL385 G7 Server HP ProLiant DL380 G7 Server HP ProLiant DL370 G6Server HP ProLiant DL360 G7 Server HP ProLiant DL320 G6 Server HP ProLiant DL180 G6 Server HP ProLiant DL165 G7 Server HP ProLiant DL160 G6 Server HP ProLiant ML370 G6 Server HP ProLiant ML350 G6 Server HP ProLiant ML330 G6 Server HP ProLiant ML310 G5 Server HP ProLiant ML150 G6 Server HP ProLiant SL170z G6 Server HP ProLiant SL160z G6 Server NOTE: For MDS600 support with BL620c/680c G7, HP 3Gb SAS switch firmware version 2.2.15.0 or higher is required NOTE: Some servers listed above may be discontinued.	

Supported OS

x86	Windows 2003
	Windows 2008
	VMware ESX 4.0
	VMware ESX 4.1
	RHEL5
	RHEL6
	SLES10
	SLES 11
	Solaris 10 (for BL 3Gb SAS host connectivity only)

Key Features

High density, low cost SAS storage for BladeSystem servers

- 70 LFF Universal SAS or SATA drives in 5U
- Two pull-out drive drawers support hot plug large form factor dual-ported SAS or SATA drives in just 5U of rack space
- Each pull-out drive drawer is supported by a redundant set of hot plug power supplies and redundant hot plug fans.
- Straight forward SAS architecture provides zoned direct attach storage for BladeSystem servers; just a Smart Array P700m controller in the blade server, a dual or single 3Gb SAS BL switches in the chassis connected to an MDS600.

Build BladeSystem server storage on the fly

- MDS600 drive bays are assigned or 'zoned' to individual blade bays using SAS 2.0 zoning capabilities. Use the Virtual SAS Manager (VSM) in the 3Gb SAS BL switch to dynamically assign up to 100 drives to specific BladeSystem servers, without complex configuration or re-cabling. Drives zoned to each server appear as local storage to that server. This allows complete flexibility to reconfigure quickly and easily without moving cables
- With zoned direct attached storage capabilities; server administrators can build local storage on the fly according to their configuration requirements.
- Quickly deploy and expand capacity by configuring additional drive bays to a P700m Smart Array Controller without moving a single cable.

High performance 6 Gb/s SAS connectivity to external storage

- To enhance performance even further, the Smart Array P711m controller installed in the blade server provides 1 GB Flash -backed write cache (FBWC).
- Supports higher performance between the 6G SAS Switch and MDS600 by attaching 2 SAS cables from any quad of 6G SAS Switch ports to the 2 ports on the MDS600 IO module to create an 8x wide SAS port.
- High Performance Smart Array P212 256MB BBWC, P411 256MB\512MB BBWC, and P812 1GB BBWC available for ProLiant DL, ML, and SL servers.

Directly connect to ProLiant DL, ML, and SL servers

- Directly connect the Smart Array P212, P411, or P812 Controller to SAS Connector 1 on the MDS600 Primary IO module(s) using a 2m SAS cables (8x wide SAS is not supported).
- Connect one or two ProLiant servers to the MDS600 drawers using one or two Smart Array P212, P411, and\or P812 controllers. NOTE: Maximum configuration with the P812 and MDS600 is 2 Drawers and 70 drives
- No Zoning. The Smart Array controller sees all 35 drive bays in the MDS600 drive drawer.
- The Smart Array P812 with firmware 3.50 or greater supports MDS600 with firmware 2.66 or greater. P812 firmware 3.50 or greater has the ability to update the MDS600 firmware with a minimum version of 2.60 to the latest version.
- P212, P411, and P812 only supports single domain with the MDS600.
- MDS600 does not support cascading SAS IO modules.

HP reliability

- Familiar Smart Array technology of the Smart Array Controllers enables support for RAID levels 0, 1, 1+0, 5, RAID 6, RAID 50 (requires P711m) & RAID 60 (requires 711m).
  - RAID 50: Protects against failure of one drive (and failure of particular multiple drives). RAID 50 is a nested RAID method that uses RAID 0 striping across RAID 5 arrays. RAID 50 tolerates one drive failure in each spanned array without loss of data. RAID 50 requires less rebuild time than single RAID 5 arrays RAID 50 requires a minimum of six drives. Requires P711m.
  - RAID 60: Allows administrators to split the RAID 6 storage across multiple external boxes. RAID 60 requires a minimum of eight drives. RAID 60 is a nested RAID method that uses

RAID 0 block-level striping across multiple RAID 6 arrays with dual distributed parity. With the inclusion of dual parity, RAID 60 will tolerate the failure of two disks in each spanned array without loss of data. Requires P711m.

- Advanced Data Guarding (RAID 6):. It allocates two sets of parity data across drives and allows simultaneous write operations. This level of fault tolerance can withstand two simultaneous drive failures without downtime or data loss.
- Distributed Data Guarding (RAID 5): This allocates parity data across multiple drives and allows simultaneous write operations. It is recommended for up to 14 hard drives.

- Receive pre-failure alerts with HP SIM. When drives installed in an MDS600 are used in conjunction with the Smart Array Controller and Systems Insight Manager, the Smart Array firmware in HP hard drives enables extensive fault prediction capabilities. If potential problems develop in one of the drives, the Smart Array Controller, Systems Insight Manager and/or Smart hard disk drive will send a pre-failure alert so you can have the drive replaced, before it fails, under warranty.

Product Technology	SAS	3Gb/s SAS
	Modular Chassis	5U, 70 Large Form Factor Universal SAS or SATA drive bays
	Drives available	Serial Attached SCSI (SAS) enterprise-class drives designed for high volume 24x7 usage. Serial-ATA (SATA) are usually reserved for archival of data as they are both relatively inexpensive and are available in very large capacities. The MDS600 can accommodate both SAS and SATA drives within the same enclosure. SAS drive performance can be approximately 30% greater than SATA performance on sequential host IO. SAS performance excels in sequential lower latency response time and random IO per second transaction performance due to higher rpm disk speeds yielding lower seek times.
	Scalability	Up to 70 SAS or SATA 3.5" hot plug hard drives per MDS600 A single BladeSystem enclosure supports up to six MDS600's externally.
	RAID	RAID is provided by the Smart Array P711m, P700m, P212, P411, or P812 Controller.
	Power supplies	Includes four redundant 1200W 12V hot plug power supplies.
	Fans	• Includes four redundant hot plug fans.
	Configuration and Management Tools	SAS BL switch for use with BladeSystem servers: Use the Virtual SAS Manager (VSM) to dynamically assign drive bays in the MDS600 to each BladeSystem server bay, without complex configuration or re-cabling. This allows complete flexibility to reconfigure quickly and easily without moving cables. Smart Array Controller: Array Configuration Utility (ACU) provides configuration and management of hard drives, and supports online array capacity expansion, logical drive extension, assignment of online spares and RAID or stripe size migration.
	Management/Health Utilities	Active hardware management using HP SIM: Manage the array with the highly refined HP Systems Insight Manager. Smart Components are available to easily update firmware. A convenient Integrated Management Log records hundreds of events and stores them in an easy-to-view format.

Service and Support, HP Care Pack and Warranty Information

Warranty	3-0-0 warranty Three-year parts exchange, next business day delivery NOTE: The warranties of the hard drive options purchased for the MDS600 are different for SAS hard drives versus SATA hard drives. SAS hard drive options have a three year warranty and SATA hard drives options have a one year warranty.
Warranty Upgrade Options	• Response - Upgrade on-site response from next business day to same day 4-hour response or 6 Hour Call To Repair • Coverage - Extend hours of coverage from next business day to 9 hours x 5 days to 24 hours x 7 days • Duration Select duration of coverage for a period of 1, 3, 4 or 5 years

For increased uptime, productivity and ROI -HP Care Pack packaged services for Storage

These days, you need to get the most out of your storage investment-you can't afford not to. When you buy HP storage products and solutions, it's also a good time to think about what levels of service and support you may need. To help take the worry out of deploying, designing, maintaining, and managing your environment, we've designed a portfolio of service options that are as: flexible, reliable and scalable as your storage. Unlike storage-only vendors, we take a holistic approach to your entire environment, bridging storage, servers, blades, software and network infrastructures with our HP Care Pack packaged services for Storage.

Protect your business beyond the warranty

When it comes to robustness and reliability, standard warranties on today's computing equipment have matured just as the technologies have matured. Good news on some fronts-but also a source of potential problems and subsequent consequences that come from depending on standard warranties alone. Standard warranty protects against product defects and some causes of downtime- but not the business. By using a standard approach to warranty uplifts, such as HP Care Pack Services, you can reduce downtime risks and be more certain of operational consistency for both mission-critical and standard business computing. Simply put, HP Care Pack Services normalize the warranty of combined products - helping you proactively guard against unplanned downtime.

Extending warranties with HP Care Pack Services

For cost-effective upgrading or extending your standard warranty, HP Care Pack Services offer a suite of standard reactive hardware and software support services that are sold separately, or combined as with our Support Plus and Support Plus 24 services. The portfolio also provides a combination of proactive and reactive services, such as Proactive 24 Service and Critical Service. In addition, with HP Proactive Select we offer an innovative approach to service delivery that gives you the flexibility to acquire the specific proactive services you need today, then add services as your needs evolve. HP Proactive Select offers a broad set of technical or per-event type service options - including server, storage, and network, SAN device, and software, environment, installation and education services. Services that you can mix and match depending on your specific requirements, from preliminary planning and equipment delivery to installation, configuration, integration, and testing, through every level of ongoing support. Our HP Care Pack packaged services for Storage assures help when you need it most. And for many products, post-warranty HP Care Pack Services are available when your original warranty has expired.

HP Storage Services: Offering reliability, flexibility and value-just like your storage

HP Storage Services offers a full spectrum of customer care, from technology support to complex migrations to complete completely managed services. HP Factory Express provides customization, integration and deployment services for turnkey solutions. HP Education offers flexible, comprehensive training on storage networking, disk storage systems, and storage software to help your IT staff get the most out of your investments. And HP Financial solutions extend innovative financing and asset management programs to cost-effective buy, manage and eventually retire your older equipment.

HP Storage Services, the trusted business technology experts who manage your technology in action, because when technology works, business works. http://www.hp.com/hps/storage

Service and Support, HP Care Pack and Warranty Information

NOTE: Care Pack Services availability may vary by product and country.

HP Care Pack Services are sold by HP and HP Authorized Service Partners:

- Services for customers purchasing from HP or an enterprise reseller are quoted using HP order configuration tools.
- Customers purchasing from a commercial reseller can find HP Care Pack Services at http://www.hp.com/go/lookuptool

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Recommended Services

HP Care Pack Services recommended for optimal satisfaction of all deployments of your product.

3-Year HP Support Plus 24

For a higher return on your storage investment, HP Support Plus 24 provides integrated hardware and software support services designed specifically for your technology. Available 24x7, this 3-year combined reactive support option delivers onsite hardware support and over-the-phone software support around-the-clock. Leverage the full strength of HP Technology Services - customers can trust the services professionals at HP to work collaboratively with them, putting our strategic and technical know-how to work across their entire infrastructure.

- Improve uptime with responsive hardware and software services
- Cost-effectively obtain expert multivendor support
- Enjoy consistent service coverage across geographically dispersed sites
- Update HP and selected third-party software at a predictable cost
- Take advantage of subscription savings on software updates
- Increase revenue-with access to world-class expertise without headcount implications
- Increase customer satisfaction-with no interoperability gaps

http://h20195.www2.hp.com/V2/GetPDF.aspx/5981-6638EN.pdf

Recommended Deployment

HP Installation Service

For smooth startup and better business outcomes, HP Hardware Installation - this service provides initial hardware installation of your product into your technology environment (system configuration is not included). In today's new era of business technology- customers can trust the services professionals at HP to work collaboratively with them, putting our strategic and technical know-how to work across their entire infrastructure.
Service Features:

- Installation in accordance with your business's configuration requirements
- The ability to achieve more effective data management

http://h71028.www7.hp.com/ERC/downloads/5981-9356EN.pdf

Related Services

Services that will enhance the user experience in many product deployments.

HP Enhanced Implementation Service for SANs

For customers who are building a new or expanding an existing Fibre Channel, FCOE, FCIP, SAS or iSCSI SAN:

HP Enhanced Implementation Service for SANs - For customers who are building a new SAN or expanding their existing one, we offer the HP Enhanced Implementation Service for SANs. This provides complete design and implementation services for Fibre Channel, FCOE, FCIP, SAS and iSCSI SAN connectivity components.

http://h20195.www2.hp.com/v2/GetPDF.aspx/5981-8527EN.pdf

HP Entry Storage Data Migration Service for Windows

For customers who need to safely migrate Windows data within their TCP/IP networks with minimal impact to their operations:

You have a need to migrate data between Windows servers within your TCP/IP network. Or you have a need to migrate storage for your Windows servers. Or both. And you need to accomplish these migrations efficiently while minimizing risk at the same time.

HP Entry Storage Data Migration Service for Windows offers you a cost competitive and convenient way to accommodate data migration triggered by a need to refresh or consolidate storage, or to create different storage tiers. This service offers a migration cost in line with the costs of storage products in small and medium-sized storage environments. The service is delivered via a skilled HP service specialist with special consideration for data availability, integrity, and ongoing operational performance during the transfer process.

http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA2-4734ENW.pdf

HP Proactive Select Service

For customers who need to improve IT performance and manageability through the use of cost effective flexible proactive services:

Proactive Select - increased flexibility, minimal complexity -- Select what works for you - your package Delivery planning + Proactive Service Credits

- Credits are used to redeem proactive services
- Three 'predefined' service credit levels - 30, 60,180 credits
- Additional credits available
- Available in 1,3, 4 & 5 year packages
  Reactive
- Utilize existing reactive services products - ranging from Next Day, through 24x7, to 6 Hour Call to Repair
  http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA2-3842ENN.pdf

Service and Support, HP Care Pack and Warranty Information

eSupport

HP eSupport is a portfolio of technology-based services that assist you with managing your business environment - from the desktop to the data center.

Support Portal
The HP support portal provides one-stop access to the information, tools and services you need to manage the daily operations of your IT environment.

Features include:

- Access to self-solve tools (including search technical knowledge base)
- Efficient logging and tracking of support cases
- Collaboration with other business and IT professionals
- Download of patches and drivers
- Access to diagnostic tools
- Proactive notification of relevant information

Access to certain features of the support portal requires an HP service agreement. To access the support portal, visit: http://www.hp.com/support

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Customer Technical Training

Consider education as an integral part of your strategy to get the best return on investment for your HP storage solution. HP offers a variety of training courses on storage software, networking, archiving and disk storage systems. Our classes are available in many delivery modalities from traditional instructor-led courses at one of our 80 training centers worldwide to on-site training customized to your needs or online. www.hp.com/learn/storage

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HP Services Awards

HP Services continues to be recognized for service and support excellence by customers, partners, industry organizations and publications around the world. Recent honors and award reflect our services team's dedications, technical expertise, professionalism and uncompromising commitment to customer satisfaction. For a list of all our awards, please visit: http://h20129.ww2.hp.com/services/cache/77318-0-0-225-121.html.

Additional Services Information

For more information about HP Care Pack Services for Storage, please visit: http://www.hp.com/hps/storage

If you have specific questions, contact your local HP representative. Contact information for a representative in your area can be found at "Contact HP" http://www.hp.com

Step 1 - MDS600 - Choose SAS or SATA configurations

Select one:

Model Name	Model Description:	Part Number
MDS600	HP MDS600 with two Dual Port I/O Module System NOTE: Base model for SAS and SATA drives. Add AP763A when using dual-ported SAS drives to create a dual domain environment. NOTE: Includes four hot plug power supplies for n+2 redundancy and four hot plug fans for n+1 redundancy. NOTE: Includes two right angle and two left angle power cords.	AJ866A
	HP MDS600 Dual I/O Module Option Kit NOTE: Add AP763A option kit to AJ866A when using dual-ported SAS drives to create a dual domain environment. NOTE: This option kit is not need when connecting directly to ProLiant DL, ML and SL servers as only single domain is supported.	AP763A
	HP MDS600 with (35) 2TB Midline SAS drives 70TB Bundle NOTE: Includes MDS600 with (35) 2TB LFF Midline SAS drives, (4) dual port I/O modules, redundant power supplies and redundant fans. NOTE: For HP c-Class Blade Systems only.	BK823A
	HP MDS600 with (70) 2TB Midline SAS drives 140TB Bundle NOTE: Includes MDS600 with (70) 2TB LFF Midline SAS drives, (4) dual port I/O modules, redundant power supplies and redundant fans. NOTE: For HP c-Class Blade Systems only.	BK824A
	HP MDS600 with (35) 1TB LFF SATA Hard Disk Drive Bundle NOTE: Includes thirty-five 1TB LFF SATA drives, two dual port I/O modules, redundant hot plug power supplies and redundant hot plug fans.	AP764A
	HP MDS600 with (35) 450GB LFF SAS Hard Disk Drive Bundle NOTE: Includes thirty-five 450GB LFF SAS drives, four dual port I/O modules, redundant hot plug power supplies and redundant hot plug fans. NOTE: For HP c-Class Blade System Only	AP765A
	HP MDS600 with (35) 300GB LFF SAS Hard Disk Drive Bundle NOTE: Includes thirty-five 300GB LFF SAS drives, four dual port I/O modules, redundant hot plug power supplies and redundant hot plug fans. NOTE: For HP c-Class Blade System Only	AX670A
	HP MDS 600 with (35) 2TB 3G SATA - 70TB Bundle- Americas NOTE: Includes 2 dual port IO Modules, 4 fans (n+2), 4 power supplies (n+2) and 35 2TB 3G SATA drives.	BK827A
	HP MDS600 w/35 1TB 6G SAS - 35TB Bundle- Americas NOTE: Includes 2 dual port IO Modules , 4 fans (n+2), 4 power supplies (n+2) and 35 drives.	BK821A
	HP MDS600 w/35 2TB 6G SAS - 70TB Bundle- Americas NOTE: Includes 2 dual port IO Modules , 4 fans (n+2), 4 power supplies (n+2) and 35 drives.	BK823A
	HP MDS600 w/35 600GB 6G SAS - 21TB Bundle- Americas NOTE: Includes 2 dual port IO Modules , 4 fans (n+2), 4 power supplies (n+2) and 35 drives.	BK819A

HP MDS600 with (70) 1TB LFF SATA Hard Disk Drive Bundle NOTE: Includes seventy 1TB LFF SATA drives, two dual port I/O modules, redundant hot plug power supplies and redundant hot plug fans.	AX668A
HP MDS600 with (70) 450GB LFF SAS Hard Disk Drive Bundle NOTE: Includes seventy 450GB LFF SAS drives, four dual port I/O modules, redundant hot plug power supplies and redundant hot plug fans. NOTE: For HP c-Class Blade System Only.	AX669A
HP MDS600 with (70) 300GB LFF SAS Hard Disk Drive Bundle NOTE: Includes seventy 300GB LFF SAS drives, four dual port I/O modules, redundant hot plug power supplies and redundant hot plug fans. NOTE: For HP c-Class Blade System Only	AX671A
HP MDS600 w/70 2TB 3G SATA - 140TB Bundle- Americas NOTE: Includes 2 dual port IO Modules, 4 fans (n+2), 4 power supplies (n+2) and 70 2TB 3G Sata drives.	BK828A
HP MDS600 w/70 1TB 6G SAS - 70TB Bundle- Americas NOTE: Includes 2 dual port IO Modules, 4 fans (n+2), 4 power supplies (n+2) and 70 drives.	BK822A
HP MDS600 w70 2TB 6G SAS - 140TB Bundle- Americas NOTE: Includes 2 dual port IO Modules, 4 fans (n+2), 4 power supplies (n+2) and 70 drives.	BK824A
HP MDS600 w/70 600GB 6G SAS - 42TB Bundle- Americas NOTE: Includes 2 dual port IO Modules, 4 fans (n+2), 4 power supplies (n+2) and 70 drives.	BK820A

Step 2 - Choose Supported Options

		Part Number
HP Smart Array P700m controller	HP Smart Array P700m Controller/512	508226-B21
	Battery Kit for P700m Smart Array Controller/512	452348-B21
HP Smart Array P711m controller	HP Smart Array P711m/1GB FBWC	513778-B21
HP 3Gb SAS BL Switch	HP 3Gb SAS BL Switch - Single Pack	AJ864A
	HP 3Gb SAS BL Switch - Dual Pack	AJ865A
HP 6Gb SAS BL Switch	HP 6Gb SAS BL Switch - Single Pack	BK763A
	HP 6Gb SAS BL Switch - Dual Pack	BK764A
HP Smart Array P212 Controller	HP Smart Array P212/256MB Controller	462834-B21
HP Smart Array P411 Controller	HP Smart Array P411/256MB Controller	462830-B21
	HP Smart Array P411/512MB Battery Backed Write Cache	462832-B21
	HP Smart Array P411/512MB Flash Backed Write Cache	578229-B21
	HP Smart Array P411/1G Flash Backed Write Cache	578229-B21
HP Smart Array P812 Controller	HP Smart Array P812/1G Flash Backed Cache Controller	487204-B21

Step 2b - SAS Cable

Model Description	
mini-SAS 4x 2M Cable All	407339-B21

Step 3 - MDS600 SAS and SATA Drive Options

Hot Plug 3.5" SAS Drives

HP 3TB 6G SAS 7.2K 3.5" MDL 1y Wty HDD	625031-B21
HP 1TB 6G SAS 7.2K DP MDL 1y Wty HDD	507614-B21
HP 2TB 6G SAS 7.2K DP MDL 1y Wty HDD	507616-B21
HP 300GB 6G SAS 3.5" 15K DP HDD	516814-B21
HP 450GB 6G SAS 3.5" 15K DP HDD	516816-B21
HP 600GB 6G SAS 3.5" 15K DP HDD	516828-B21

NOTE: The MDS600 will run 6 Gb/s SAS drives at 3 Gb/s.

NOTE: For 3TB HDD support in MDS600 for HP Bladesystem requires P711m and 6GB BL SAS switch

Hot Plug 3.5" SATA Drives

HP 500GB 3G SATA 7.2K 3.5" MDL 1y Wty HDD	458928-B21
HP 1TB 3G SATA 7.2K 3.5" MDL 1y Wty HDD	454146-B21
HP 2TB 3G SATA 7.2K 3.5" MDL 1y Wty HDD	507632-B21
HP 3TB 3G SATA 7.2K 3.5" MDL 1y Wty HDD	628059-B21

NOTE: The MDS600 will run 3 Gb/s SATA drives at 1.5 Gb/s.

NOTE: For 3TB HDD support in MDS600 for HP Bladesystem requires P711m and 6GB BL SAS switch

Step 4 - Choose Rack Options

Choose HP Rack 10000 series Cabinets for the MDS600
The increasing power of new high-performance processor technology requires increased cooling efficiency for rack-mounted servers. The 10000 Series Racks provide enhanced airflow for maximum cooling, allowing these racks to be fully loaded with servers using the latest processors.

http://h18004.www1.hp.com/products/servers/proliantstorage/racks/10000series/index.html

NOTE: An MDS600 fully loaded with drives weighs 320lbs.

NOTE: HP has not tested or validated the MDS600 with any third-party racks. Before installing the MDS600 in a third-party rack, be sure to properly scope the limitations of the rack. Before proceeding with the installation, consider the following:

- You must fully understand the static and dynamic load carrying capacity of the rack and be sure that it can accommodate the weight of the MDS600.
- You must install a 1U tray (part no 501037-B21) beneath the MDS600 to ensure proper support.
- Be sure sufficient clearance exists for cabling, installation and removal of the enclosure, actuation of the rack doors, and full articulation of the drive drawers

MDS600	INPUT POWER (per power supply)	Rated Line Voltage	90 to 132 VAC 180 to 264 VAC
		Rated Input Frequency	47 to 63 Hz
		Rated Input Current	10A (at 100 VAC), 7.8A (at 200VAC)
		Rated Input Power	964 W (at 100 VAC), 1412 W (at 240 VAC)
	TEMPERATURE AND HUMIDITY RANGES	Operating Temperature	50° to 95° F (10° to 35° C) NOTE: Maximum Rated 10°C per/hr (50°F/hr)
		Storage Temperature	-22° to 140° F (-30° to 60° C) NOTE: Maximum Rated 20°C/hr (68°F/hr)
		Operating Humidity	10% to 90% relative humidity (Rh), 28° C (82.4° F) maximum wet bulb temperature, non-condensing
		Non-Operating Humidity	5% to 95% relative humidity (Rh), 38.7° C (101.66° F) maximum wet bulb temperature, non-condensing
	PHYSICAL	Length	89.12 cm
		Width	44.7 cm (17.6 in)
		Height	22.1 cm (8.7 in)
		Chassis	72.58 kg (160 lb) with no hard drives installed
		Weight	145 kg (320 lb) with hard drives installed

Power Consumption (maximum)

Power consumption at 208V

Drive Type	Typical	Service Position Maximum
7200 RPM SATA	800W	1140W
10K 400G SAS	940W	1340W
15K SAS	1280W	1710W

Power consumption at 120V

Drive Type	Typical	Service Position Maximum
7200 RPM SATA	1000W	1500W
10K 400G SAS	1100W	1600W
15K SAS	1320W	1770W

NOTE: Input Power and Heat Dissipation specifications are maximum values and apply to worst-case conditions at full rated power supply load. The power/heat dissipation for your installation will vary depending on the equipment configuration.

NOTE: Temperature ratings shown are for sea level. An altitude derating of 1°C per 300 m (1.8°F per 1,000 ft) to 3048 m (10,000 ft) is applicable. No direct sunlight allowed. The upper limit may be limited by the type and number of options installed.

NOTE: Storage maximum humidity of 95% is based on a maximum temperature of 45°C (113°F). Altitude maximum for storage corresponds to a pressure minimum of 70 KPa.

NOTE: The "service position maximum" column is the test result with the drawers open.

	Upgradeable Firmware	Offline
	Disk Drives and Enclosure Protocol Support	HP 3.5" SAS 3 Gb/s and 1.5 Gb/s SATA
I/O Module	Connector Type	External mini-SAS 4x (SFF8088)
	Number of Ports	Two

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